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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,075	02/11/2004	Kensaku Shinozaki	042100	3422

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EXAMINER

VAN, LUAN V

ART UNIT PAPER NUMBER

1753

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/775,075

Applicant(s)

SHINOZAKI, KENSAKU

Examiner

Luan V. Van

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 10 and 11 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-6, 10 and 11 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's amendment of April 21, 2006 does not render the application allowable.

The amendment is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Claims 1-6 and 10-11 are amended to recite the limitation of "wherein knob-like projections are formed intermittently on its smooth matte side" However, there is no evidence in the applicant's disclosure to support the amended limitations. The specification clearly does not teach that the knob-like projections are formed intermittently; or that the knob-like projections are formed on a smooth matte side. The specification simply states that the prepared rough surface having the knob-like projections is finished to a smooth surface (page 10 lines 9-20), which is different from the amended limitation of having the knob-like projections formed on a smooth matte side. The disclosure, therefore, does not provide a clear indication to support the amended limitations. Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Status of Objections and Rejections***

The rejection of claims 5-6 under 35 U.S.C. 112, second paragraph is withdrawn in view of Applicant's amendment.

All are rejections from the previous office action are maintained.

New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendments.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 and 10-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1-6 and 10-11 are amended to recite the limitation of "wherein knob-like projections are formed intermittently on its smooth matte side" However, there is no evidence in the applicant's disclosure to support the amended limitations. The specification clearly does not teach that the knob-like projections are formed intermittently; or that the knob-like projections are formed on a smooth matte side. The specification simply states that the prepared rough

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surface having the knob-like projections is finished to a smooth surface (page 10 lines 9-20), which is different from the amended limitation of having the knob-like projections formed on a smooth matte side. The disclosure, therefore, does not provide a clear indication to support the amended limitations.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Fatcheric et al.

Regarding claim 1, Fatcheric et al. teach an electrodeposited copper foil wherein part of its surface comprises a surface having knob-like projections (figure 2) and a surface roughness of 2-4.5 micrometer (on the shiny side, column 3 lines 18-19), which is within the range of the instant claim. The shiny side surface reads on the smooth matte side of the instant claim, since it is the side that is laminated to a substrate (column 3 lines 25-35). With respect to the limitation of the projections being formed intermittently, such limitation is not given patentability weight, because the instant claim is directed to a product. According to MPEP 2113, even though product-by-process claims are limited by and defined by the process, determination of patentability is based

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on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 2, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface having said knob-like projections and said surface roughness of 4-7.5 micrometer is a surface of an untreated copper foil for bonding with a resin substrate and is further roughening treated by running a predetermined current (column 5 lines 7-10) through the foil for a predetermined time (column 5 lines 7-10) in an electroforming bath.

Regarding claim 3, Fatcheric et al. teach an electrodeposited copper foil, wherein said electroforming bath is an acidic electroforming bath containing arsenic (column 5 lines 7-17).

Regarding claim 4, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer (column 5 lines 7-17).

Regarding claim 5-6 and 10-11, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer and at least one layer of nickel plating, zinc plating, cobalt plating, plating of an alloy of the same (column 5 lines 13-20) and a chromate treatment layer (column 5 lines 21-23) on that, or further formed with a coupling agent treatment layer (column 5 lines 21-24) .

Claims 1-2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolski et al. '140.

Regarding claim 1, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 3.3 to 3.7 micrometer (on the matte side, see comparative example 1 in table 2 and table 3), which is within the range of the instant claim. With respect to the limitation of the projections being formed intermittently, such limitation is not given patentability weight, because the instant claim is directed to a product.

As described above, according to MPEP 2113, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 2, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 3.3 to 3.7 micrometer (on the matte side, see comparative example 1 in table 2 and table 3) is a surface of an untreated copper foil for bonding with a resin substrate and is further roughening treated by running a predetermined current (table 1) through the foil for a predetermined time in

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an electroforming bath. The electrolysis is inherently performed for a predetermined time.

Regarding claim 4, Wolski et al. '140 teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer (column 5 lines 30-35).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3, 5, 6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolski et al. '140 in view of Fatcheric et al.

Wolski et al. '140 teach the copper foil as described above. The difference between the reference to Wolski et al. '140 and the instant claims is that the reference



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does not explicitly teach forming an additional nickel, zinc, cobalt layer or alloy thereof and a chromate layer.

Fatcheric et al. teach an electrodeposited copper foil, wherein said electroforming bath is an acidic electroforming bath containing nickel, cobalt, zinc or arsenic for depositing the respective metal or alloys thereof (column 5 lines 7-17). Additionally, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer and at least one layer of nickel plating, zinc plating, cobalt plating, plating of an alloy of the same (column 5 lines 13-20) and a chromate treatment layer (column 5 lines 21-23) on that, or further formed with a coupling agent treatment layer (column 5 lines 21-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the foil of Wolski et al. '140 by depositing a zinc layer of Fatcheric et al., because the zinc layer provides a barrier layer between the copper foil and the laminating resin substrate in order to prevent laminate staining which occurs when ingredients of the resin chemically react with copper (column 4 lines 50-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the foil of Wolski et al. '140 by depositing a chromate layer of Fatcheric et al., because it would provide a protective layer for the underlying barrier layers (column 5 lines 21-22).

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive.

In the arguments presented on page 6 of the amendment, the applicant argues that Fatcheric et al. teach an electrolytically deposited copper foil having shapes of mountains and valleys provided on the matte side of the foil, pointing to Fig. 2 of Fatcheric et al. as support for this statement. The applicant concludes that the mountains and valleys are formed continuously on the copper foil surface, again pointing to Fig. 2 and column 2 line 30 of Fatcheric et al. for support. First, since the instant claim is directed to product, the process by which the product is made is not given weight. As described above, according to MPEP 2113, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Second, Fatcheric et al. teach that "the matte side should be relatively smooth in order to assure that the grain size and orientation are suitable for etching" (column 2 lines 30-32); this teaching does not support the conclusion that the knob-like projections of Fatcheric et al. are formed uniformly and continuously, as alleged by the applicant. The applicant further points to Fig. 2 of Fatcheric et al. to support the applicant's allegation that the projections of Fatcheric et al. are formed uniformly and continuously. The examiner respectfully disagrees with this conclusion. The instant specification does not define continuous or intermittent by any measurable variables. Therefore, the matte side surface of Fatcheric et al. in Fig. 2 can be formed

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intermittently. Nevertheless, the shiny side surface of Fatcheric et al. reads on the smooth matte side of the instant claim, since it is the side that is laminated to a substrate (column 3 lines 25-35). The applicant also argues that Fatcheric et al. do not teach forming a copper plating layer on the surface in page 8. The examiner disagrees. Fatcheric et al. teach this step in column 4 lines 49-64.

Similarly, the applicant argues in page 8-9 that the projections of Wolski et al. '140 are formed continuously, pointing to column 5 lines 31-34 as support for this conclusion. In column 5 lines 31-34, Wolski et al. '140 teach that "a plating surface having less unevenness can be obtained" using an organic additive. However, this is not sufficient to support the conclusion that that the projections of Wolski et al. '140 are formed continuously. With respect to the surface roughness, Wolski et al. '140 teach a surface roughness of 3.3 to 3.7 micrometer (on the matte side, see comparative example 1 in table 2 and table 3), which is within the range of the instant claim. The remaining arguments presented in 10-11 are directed to inherent properties of the copper foil and matter that is not claimed, and are therefore not relevant.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 9:30-6:00.

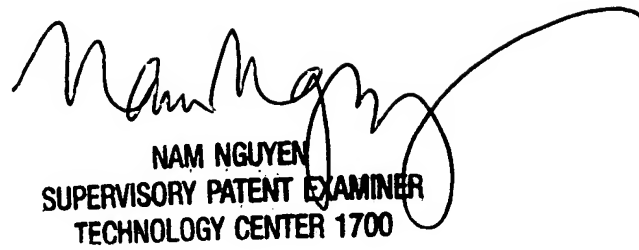
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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May 9, 2006



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